Patent Claims

1. Glass-plastic composite film, especially for use in electronic components and devices, for example displays, consisting of a glass film having a thickness between 10 µm and 500 µm, characterized in that a polymer layer having a thickness between 1 µm and 200 µm is applied directly to at least one of its side faces, and in that at least one side on the surface has a waviness of less than 100 nm and a roughness RT < 30 nm.

2. Glass-plastic composite film as per claim 1, characterized in that the optical retardation does not exceed 20 nm.

3. Glass-plastic composite film as per ~~one of the claims 1 to 2~~ CLAIM 1, characterized in that the streak is less than 100 nm, preferably < 50 nm, particularly preferably < 30 nm.

4. Glass-plastic composite film as per ~~any of the claims 1 to 3~~ CLAIM 1, characterized in that both sides on their surface have a waviness of less than 100 nm and a roughness RT of less than 30 nm.

5. Glass-plastic composite film as per ~~any of the claims 1 to 4~~ CLAIM 1, characterized in that the glass thickness is 10 to 400 µm, preferably 10 to 200 µm, particularly preferably 10 to 100 µm.

6. Glass-plastic composite film as per ~~any of the claims 1 to 5~~ CLAIM 1, characterized in that the thickness of the polymer layer is 2 to 100 µm, preferably 2 to 50 µm.

7. Glass-plastic composite film as per ~~any of the claims 1 to 6~~ CLAIM 1, characterized in that the film is also provided with the polymer layer on at least one of its edges.

8. Glass-plastic composite film as per ~~any of the claims 1 to 7~~ CLAIM 1, characterized in that the polymer layer has a modulus of elasticity of < 5,000 N/mm2, preferably < 2,600 N/mm2, particularly preferably < 1,500 N/mm2.

9. Glass-plastic composite film as per ~~any of the claims 1 to 8~~ CLAIM 1, characterized in that the transmission of the glass-plastic composite film is more than 90% of the uncoated

glass film and that the cloudiness as a result of the polymer coating increases by less than 1%.

10. Glass-plastic composite film as per ~~any of the claims 1 to 9~~ CLAIM 1, characterized in that the roughness of the surface RT is < 20 nm, preferably < 10 nm, that the waviness of the surface is < 80 nm, preferably < 50 nm, particularly preferably < 30 nm and that the optical retardation does not exceed 15 nm.

11. Glass-plastic composite film as per ~~any of the claims 1 to 10~~ CLAIM 1, characterized in that in continuous use the film is temperature-resistant up to 130°C, and that for short-time heating the film is temperature-resistant up to 140°C, preferably 180°C, particularly preferably 200°C.

12. Glass-plastic composite film as per ~~any of the claims 1 to 11~~ CLAIM 1, characterized in that the polymer layer consists of a silicone polymer, a sol-gel polymer, a polycarbonate, a polyether sulphone, a polyacrylate, a polyimide, a cycloolefin copolymer, a polyarylate or a silicone resin.

13. Glass-plastic composite film as per ~~any of the claims 1 to 12~~ CLAIM 1, characterized in that the glass film consists of an aluminosilicate glass, aluminoborosilicate glass, borosilicate glass, preferably an alkali-free borosilicate glass.

14. Method for producing a glass-plastic composite film as per ~~any of the claims 1 to 13~~ CLAIM 1, comprising the steps:

producing a glass film having a thickness of 10 to 500 µm using the down-draw process at a drawing rate of 2 to 12 m/min.;

pre-treating the glass film surface;

directly applying a 1 to 200 µm thick polymer layer in the liquid phase;

cutting the polymer-coated glass film.

15. Method for producing a glass-plastic composite film as per ~~any of the claims 1 to 13~~ CLAIM 1, comprising the steps:

producing a glass film having a thickness of 10 to 500 µm using the down-draw process at a drawing rate of 2 to 12 m/min.;

cutting the glass film;
pre-treating the glass film surface;
directly applying a 1 to 200 µm thick polymer layer in the liquid phase.

16. Method according to claim 15, characterized in that the polymer layer is applied by means of spinning or spray spinning.

17. Method according to claim 14 ~~or 15~~, characterized in that the polymer layer is applied by means of pouring on or rolling on or spraying or dipping.

18. Method according to ~~any of the claims 14 to 17~~ CLAIM 14, characterized in that in addition to the side face at least one edge is coated.

19. Method according to ~~any of the claims 14 to 18~~ CLAIM 14, characterized in that a glass film having a thickness of 10 to 400 µm, preferably 10 to 200 µm, particularly preferably 10 to 100 µm is produced in the glass drawing device by means of the down-draw method.

20. Method according to ~~any of the claims 14 to 19~~ CLAIM 14, characterized in that the coating produces a polymer layer thickness of 2 to 100 µm, preferably 2 to 50 µm.

21. Method according to ~~any of the claims 14 to 20~~ CLAIM 14, characterized in that the surface treatment is performed before the coating with UV irradiation in an ozone-containing atmosphere or with a corona treatment or with flaming (?).

22. Method according to ~~any of the claims 14 to 21~~ CLAIM 14, characterized in that subsequent to coating the polymer coating is hardened by means of UV irradiation and/or dried under the influence of heat.

23. Method according to ~~any of the claims 14 to 22~~ CLAIM 14, characterized in that the polymer consists of a silicone polymer, a sol-gel polymer, a polycarbonate, a polyether sulphone, a polyacrylate, a polyimide, a cycloolefin copolymer, a polyarylate or a silicone resin.

24. Method according to ~~any of the claims 14 to 23~~ [claim 14], characterized in that for producing the glass film a glass film of an aluminosilicate glass, aluminoborosilicate glass, a borosilicate glass, preferably an alkali-free borosilicate glass is used.

25. Use of the glass-plastic composite film as per ~~any of the claims 1 to 13~~ [claim 1] for manufacturing electronic components and optoelectronic devices, especially on the basis of liquid crystals or light-emitting layers.